PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Koji SUGIURA

Docket No: Q88729

Appln. No.: 10/543,100

Group Art Unit: 1616

Confirmation No.: 4084

Examiner: Nathan W. SCHLIENTZ

Filed: July 22, 2005

For: VITREOUS ANTIMICROBIAL AGENT AND ANTIMICROBIAL PRODUCT

DECLARATION UNDER 37 C.F.R. § 1.132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Koji Sugiura, hereby declare and state:

I am a citizen of JAPAN;

I graduated from the Faculty of Engineering of Gifu University in March, 1986;

Since August, 1990, I have been employed by TOAGOSEI CO., LTD. and have been engaged in the study of new materials and functional materials. I worked in the New Material Laboratory of the company from August, 1990, in the Functional Product Laboratory of the company from April, 2001, in the Functional Material Laboratory of the company from April, 2005, and in the New Material Laboratory from April, 2007 to the present; and

I am the inventor of the invention described and claimed in the above-identified application, and I am familiar with the Office Action dated March 26, 2008.

To demonstrate the unexpected superiority of the present invention, the following comparative experimentation was conducted by me or under my direct supervision.

1. Place of Examination

New Material Laboratory

C/o TOAGOSEI CO., LTD.,

1-1, Funami-cho, Minato-ku, Nagoya-shi, AICHI, JAPAN

2. Date of Examination

June 9, 2008, to June 14, 2008

3. Experiments

1) Object

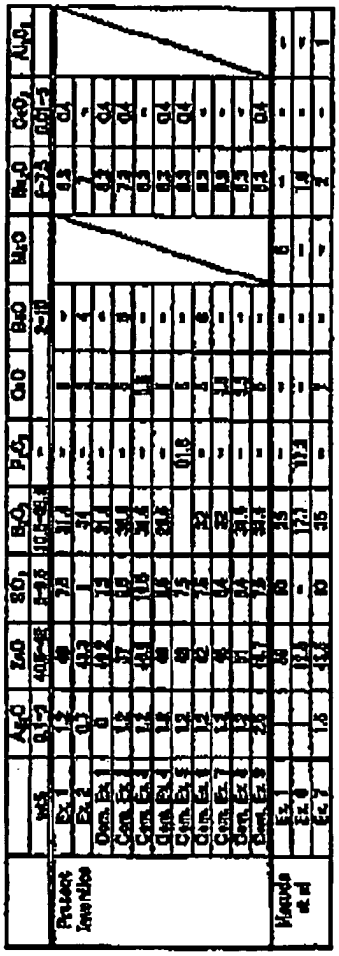
The object of the present experiments is to compare a vitreous antimicrobial agent described in US Application No. 10/543,100 (also called "the present invention" hereinafter) and a vitreous antimicrobial agent described in a prior art, JP 2002-037643-A (Masuda et al.) under the same condition, and to prove that the vitreous antimicrobial agent of the present invention has unexpectedly superior effects.

2) Experimental Method

The vitreous antimicrobial agents of Examples 1, 6, and 7 of JP 2002-037643-A (Masuda et al.) were produced at a 100 kg scale, and the glasses were subjected to the various types of

evaluation by the same method as in the present invention. Glass starting material formulations had the compositions shown in Table 1 below.

(Table 1)



For Examples 1 and 6 of Masuda et al., the glass was partially colored pale yellow during cooling after melting, and for Example 7 of Masuda et al., the glass was partially colored yellow and a silver residue which was not formed to a glass was observed in a melting pot.

0.5 weight % of the vitreous antimicrobial agents thus obtained were added to a polypropylene resin (Grand Polypro J707Z, manufactured by Grand Polymer Co., Ltd.), and the mixtures were injection molded to give evaluation molding plates in the same manner as Example 3 of the present invention. The coloration test, the antimicrobial test (initial antimicrobial effect and antimicrobial effect after immersion in hot water), and the hot water immersion test were carried out. Results are shown in Table 2 below.

When Examples 1, 6, and 7 of Masuda et al. were commercially produced on a large scale such as a 100 kg scale, colorless glasses were not obtained. Furthermore, molding plates using the antimicrobial glasses after the hot water resistant test were decolored, and the antimicrobial effects after the hot water resistance test were greatly deteriorated. On the other hand, in the present invention, transparent (colorless) molding plates could easily be obtained. The molding plates (Nos. 1 and 2) to which antimicrobial agents formed from the glasses of Examples 1 and 2 of the present invention were added had excellent antimicrobial properties and excellent coloration resistance.

(Table 2)

Molding Plate No.	Type of siliceous antimicrobial agent		Antimicrobial activity evaluation				Color of molding plate after hot water resistance test
			Initial antimicrobial effect (difference in viable cell count)		Antimicrobial effect after hot water immersion (difference in viable cell count)		
			E. coli	Staphylococcus Aureus	E. coli	Staphylococcus aureus	
1	Present invention	Ex. 1	6.2<	4.4<	6.1<	4.4<	Colorless
2		Ex. 2	6.2<	4.4<	6.1<	4.4<	Colorless
3		Com. Ex. 1	4.1	3.4	0.4	0.7	Colorless
4		Com. Ex. 2	5.8	2.1	2.0	0.8	Colorless
5		Com. Ex. 3	6.2<	3.7	1.8	1.9	Pale yellow
6		Com. Ex. 4	5.8	1.8	2.4	1.1	Pale yellow
7		Com. Ex. 5	6.2<	4.4<	4.8	2.8	Dark yellow
8		Com. Ex. 6	6.2<	3.8	1.0	0.5	Pale yellow
9		Com. Ex. 7	6.2<	4.2	0.9	0.8	Pale yellow
10		Com. Ex. 8	6.2<	4.4<	2.9	3.9	Yellow
11		Com. Ex. 9	6.2<	4.4<	6.1<	4.4<	Yellow
12	Masuda et al.	Ex. 1	6.2<	4.4<	1.9	0.5	Pale yellow
13		Ex. 6	6.2<	4.4<	4.7	6.1	Pale yellow
14		Ex. 7	6.2<	4.4<	2.0	0.7	Yellow

Thus, I conclude that the present invention provides unexpectedly superior results over the prior art.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: July 23, 2008

By: Koji Sugiura
Koji Sugiura

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evaluation by the same method as in the present invention. Glass starting material formulations had the compositions shown in Table 1 below.

(Table 1)

		Ag_2O	ZnO	SiO_2	B_2O_3	P_2O_5	CaO	BaO	MgO	Na_2O	CeO_2	Al_2O_3
	wt%	0.1~2	40.5~49	6~9.5	30.5~39.5	-	2~10			6~7.5	0.01~5	
Present Invention	Ex. 1	1.2	48	7.5	31.6	-	5	-		6.3	0.4	-
	Ex. 2	0.7	43.3	8	34	-	3	4		7	-	-
	Com. Ex. 1	0	49.2	7.5	31.6	-	5	-		6.3	0.4	1
	Com. Ex. 2	1.2	37	9.5	38.6	-	5	3		7.3	0.4	
	Com. Ex. 3	1.2	46.9	14.5	31.6	-	1.5	-		6.3	-	
	Com. Ex. 4	1.2	48	8.5	29.6	-	8	-		6.3	0.4	
	Com. Ex. 5	1.2	48	7.5		31.6	5	-		6.3	0.4	
	Com. Ex. 6	1.2	42	7.5	32	-	5	6		6.3	-	
	Com. Ex. 7	1.2	48	8.4	32	-	1.5	-		8.9	-	
	Com. Ex. 8	1.2	51	8.4	31.6	-	1.5	1		6.3	-	
	Com. Ex. 9	2.5	46.7	7.5	31.6	-	5	-		6.3	0.4	
Masuda et al	Ex. 1	-	59	15	25	-	-	-	5	-	-	-
	Ex. 6	-	62.5	-	17.7	17.3	-	-	-	1.6	-	-
	Ex. 7	1.5	43.5	10	35	-	7	-	-	2	-	1

For Examples 1 and 6 of Masuda et al., the glass was partially colored pale yellow during cooling after melting, and for Example 7 of Masuda et al., the glass was partially colored yellow and a silver residue which was not formed to a glass was observed in a melting pot.

0.5 weight % of the vitreous antimicrobial agents thus obtained were added to a polypropylene resin (Grand Polypro J707Z, manufactured by Grand Polymer Co., Ltd.), and the mixtures were injection molded to give evaluation molding plates in the same manner as Example 3 of the present invention. The coloration test, the antimicrobial test (initial antimicrobial effect and antimicrobial effect after immersion in hot water), and the hot water immersion test were carried out. Results are shown in Table 2 below.

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